

BRIEF REPORT

Treatment of Esophagogastric Anastomotic Leak with Perianastomotic Drain

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Introduction: The most efficient treatment of such anastomotic leaks after esophagectomy remains controversial. Our objective was to evaluate the effectiveness of perianastomotic drains in anastomotic leaks.

Methods: Five patients with intrathoracic anastomotic leaks had placement of perianastomotic drains through remanet esophagus and fistula into infected area. The other conservative methods of treatment were also chosen simultaneously.

Results: The perianastomotic drains were placed successfully in all five patients. None of the patients underwent rethoracotomy. They were all cured. The median period to clinical healing was 33 days. The median hospital stay after the perianastomotic drainage procedure was 37 days.

Conclusion: This procedure proved to be safe and effective in the treatment of esophagogastric anastomotic leak with perianastomotic drain through fistula.

Key Words: Esophagectomy, Anastomotic leak, Perianastomotic drain.

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Esophagectomy is the previous choice of treatment for esophageal cancer. Anastomotic leak is one of the most feared complications to occur after esophagectomy.^{1–3} Most esophageal surgery units have noted a favorable trend toward reduced incidence and morbidity of esophageal leaks over the past three decades. Nevertheless, esophagogastric anastomotic leak remains an important source of morbidity and mortality after surgery.

The most efficient treatment of such leaks remains controversial. We report our strategy of managing esophagogastric anastomotic leak.

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Disclosure: The authors declare no conflicts of interest.

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PATIENTS AND METHODS

In the past 2 years, nine patients developed intrathoracic anastomotic leaks postoperatively. Five of them were referred to our program for the treatment of clinically apparent mediastinitis and empyema. The other four patients were excluded: two patients were excluded because of simplex cervical anastomotic leaks, who were cured by opening of the wound and daily irrigation and packing; and the other two patients were due to intrathoracic leaks and empyema cured by chest tube drainage.

The Independent Medical Ethics Committee of the Hospital Have Waived the Requirement for Consent to Participate in the Retrospective Research

All five patients had an esophagectomy combined with immediate reconstruction using whole stomach. Esophagectomy was performed by means of a left thoracotomy with circumferential incision of the left hemi-diaphragm for gastroesophageal mobilization, encompassing a two-field lymphadenectomy, with a stapled intrathoracic anastomosis in the left apex of the chest.

Anastomotic leak was detected and confirmed by using a water-soluble contrast agent (meglumine amidotrizoate) when leak was under suspicion. The median time to confirmation of a significant leak was 6 days after surgery (range, 3–9 days). In those patients with leaks, conservative methods of treatment were chosen, consisted of absence of oral intake, nasogastric suction drainage, enteral nutrition, antibiotic therapy, and drainage of the infected material (through chest tube and perianastomotic drain).

The chest tube was placed in the pleural cavity when empyema occurred. The perianastomotic drains were placed through nasal cavity, remanet esophagus, and fistula into mediastinum (the bottom of the infected area) under the fluoroscopic guidance, which were performed by interventional radiologists. The nasogastric tube or smaller bore tube was used as the perianastomotic drain, which had multiple side holes. The drain position was checked under fluoroscopy by the injection of contrast medium through the tube. Intermittent or continuous irrigation may be applied if necessary. The drain was pulled out gradually till complete removal when daily drainage had ceased or when the abscess cavity had been eliminated, provided the patient's general condition was satisfactory.

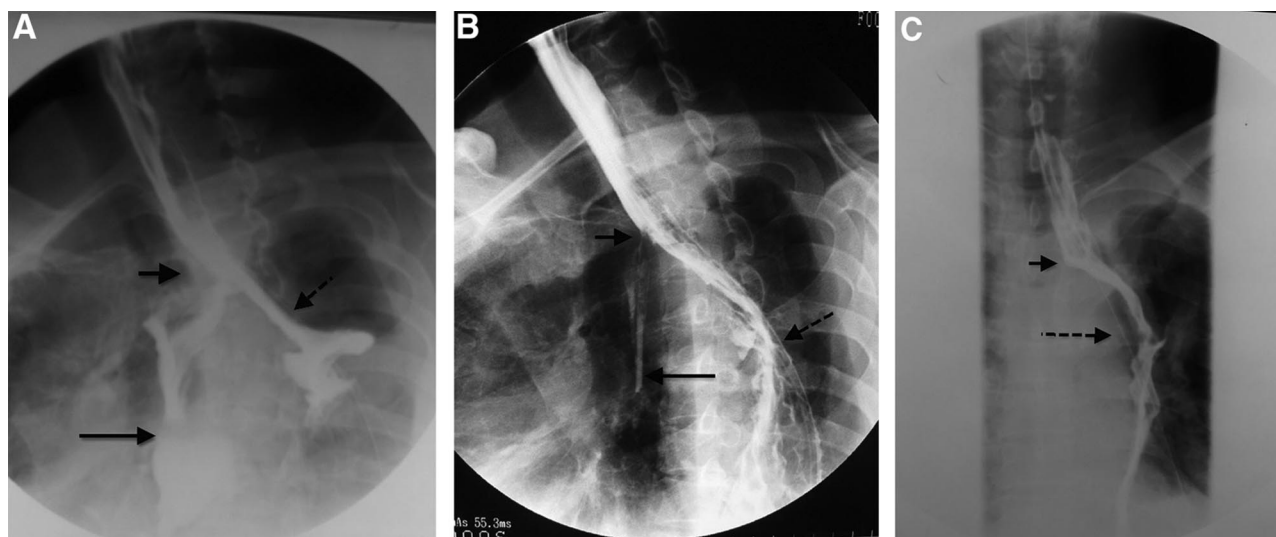


FIGURE 1. A, A contrast study demonstrates a intrathoracic esophagogastric anastomotic leak (short arrow); mediastinal abscess cavity (straight arrow); intrathoracic stomach and nasojejunal tube (dotted arrow). B, Perianastomotic drain through fistula. C, Complete healing after 4 week.

RESULTS

Five patients' leaks were all cured. The perianastomotic drains were all placed successfully. Clinical healing of the leak was deemed to have occurred when the patient became asymptomatic and the consulting surgeon recommenced oral feeding. Radiologic evidence of leak healing occurred when no anastomotic leakage could be shown with provocative contrast assessment (Figure 1).

The median period to clinical healing was 33 days (range, 23–49 days; mean, 36.6 days). The median hospital stay after the perianastomotic drainage procedure in the five patients was 37 days (range, 28–55 days; mean, 39.4 days).

DISCUSSION

Esophagogastric anastomotic leaks complicate 5 to 20% of esophagectomy for esophageal cancer, and they are responsible for approximately one third of perioperative deaths after esophagectomy.^{4–6}

Gastric fluid has digestive properties that make leakage extremely noxious. Anaerobic bacteria from the patient's oral cavity and swallowed saliva will cause a virulent tissue reaction and infection that can result in mediastinitis, empyema, or multiple organ failure. It may also be fistulates into trachea or aorta. Generally speaking, eliminating oral intake and decompressing the conduit with a nasogastric tube, parenteral or enteral nutrition and broad-spectrum antibiotics are basic steps once anastomotic leaks confirmed. Adequate drain of infected fluid is much more necessary. This may include appropriately positioned large-bore underwater seal drains to encourage full expansion of the lung. But it is often not enough, especially when pus is compartmented and mediastinitis is very serious. Leak from an anastomosis may lead to the formation of a perianastomotic abscess. So perianastomotic drain is very useful. Computed tomography guidance is an eligible method formerly.⁷ But sometimes it is dangerous and

infeasible, such as to infection of special position adjacent to great vessels. Therefore, we place perianastomotic drain through nasal cavity and fistula into mediastinum (infected area). The perianastomotic drainage through fistula could completely drain infected fluid nearby the anastomosis and prevent continuous contamination. Daily irrigation will be recommended when the abscess content is extremely viscous and thick. Maintenance of nutrition and complete drainage will allow granulation tissue to grow in this area and produce closure of the fistula.

In our series, five patients' leaks were all cured. Surgical reexploration or conservative treatment of anastomotic leak is well described in the surgery literature.^{4,8} Sauvanet et al.⁸ described conservative treatment in a series of 38 patients of which 27 were symptomatic. The treatment involved assisted nutrition and perianastomotic drainage. In nine (33%) of these 27 patients, death was attributable to leakage. Viste et al.⁹ analyzed 22 clinically symptomatic leakages of which 10 required a second surgery. In this series, nine (40.9%) of the 22 patients died. The most efficient treatment of such leaks remains controversial. Controversies exist as to how to best establish the diagnosis of leakage and whether it should be managed surgically or nonsurgically to achieve the best short-term and long-term outcomes.¹⁰ Strategies of management vary in their invasiveness. They include conservative treatment (i.e., antibiotics, percutaneous pleural drainage, nutritional support, and nil-by-mouth only¹¹), intraluminal interventions to attempt to seal the leak,¹² or repeat thoracotomy at some stage with formal debridement of infected tissue and targeted treatment of the anastomosis depending on local conditions within the chest.^{1,3}

In summary, this procedure proved to be safe and effective in the treatment of esophagogastric anastomotic leaks with perianastomotic drain through fistula. Drainage of the infected material is the most important aspect of treat-

ment. The placement of drains can ensure drainage of all associated fluid collections. Close cooperation between surgeons and interventional radiologists has revolutionized the management of enteric fistulas.

REFERENCES

1. Tam P, Fok M, Wong J. Reexploration for complications after oesophagectomy for cancer. *J Thorac Cardiovasc Surg* 1989;98:1122–1127.
2. Lam TC, Fok M, Cheng SW, et al. Anastomotic complications after oesophagectomy for cancer. A comparison of neck and chest anastomoses. *J Thorac Cardiovasc Surg* 1992;104:395–400.
3. Griffin SM, Lamb PJ, Dresner SM, et al. Diagnosis and management of mediastinal leak following radical oesophagectomy. *Br J Surg* 2001;88:1346–1351.
4. Urschel JD. Esophagogastric anastomotic leaks complicating esophagectomy: a review. *Am J Surg* 1995;169:634–640.
5. Dewar L, Gelfand G, Finley RJ, et al. Factors affecting cervical anastomotic leak and stricture formation following esophagogastric anastomosis and gastric tube interposition. *Am J Surg* 1992;163:484–489.
6. Valverde A, Hay JM, Fingerhut A, et al. Manual versus mechanical esophagogastric anastomosis after resection for carcinoma: a controlled trial. French Associations for Surgical Research. *Surgery* 1996;120:476–483.
7. Martin LW, Hofstetter W, Swisher SG, et al. Management of intrathoracic leaks following esophagectomy. *Adv Surg* 2006;40:173–190.
8. Sauvanet A, Baltar J, Le Mee J, et al. Diagnosis and conservative management of intrathoracic leakage after oesophagectomy. *Br J Surg* 1998;85:1446–1449.
9. Viste A, Geir E, Soreide O. Stomach cancer: a prospective study of anastomotic failure following total gastrectomy. *Acta Chir Scand* 1987;153:303–306.
10. Page RD, Shackcloth MJ, Russell GN, et al. Surgical treatment of anastomotic leaks after oesophagectomy. *Eur J Cardiothorac Surg* 2005;27:337–343.
11. Xu LT, Sun ZF, Li ZJ, et al. Surgical treatment of carcinoma of the oesophagus and cardiac portion of the stomach in 850 patients. *Ann Thorac Surg* 1983;35:542–547.
12. Pross M, Manger T, Reinheckel T, et al. Endoscopic treatment of clinically symptomatic leaks of thoracic oesophageal anastomoses. *Gastrointest Endosc* 2000;51:73–76.